

REMARKS

After the foregoing amendment claims 43-50 are pending in this application. Claim 49 has been amended to clarify what the second insulating material comprises by using a Markush group format. Support for this amendment is found in the substitute specification in paragraph [0108] on page 16. Claim 49 has also been amended to clearly recite that a portion of the second insulating material is bonded to another portion of said material by heating. Support for this amendment may be found in the substitute specification in paragraph [0107] on page 16. Accordingly, no new matter has been added.

Claim Rejection – 35 U.S.C. § 112, second paragraph

The Examiner has rejected claim 49 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. The Examiner states that the limitation in claim 49 of “a bonding insulating material containing woven cloth or nonwoven cloth immersed in a non-cured or half-cured rubber or thermoplastic resin, and that said second insulating material and another second insulating material are bonded by heating” is unclear because of the use of multiple alternatives “or.” The Examiner also contends that the recitation “another second insulating material” is an element that has not been defined. Applicants respectfully traverse this rejection in view of the foregoing amendment.

Applicants have amended claim 49 to eliminate the use of multiple alternative “or.” The possible combinations of what the second insulating material comprises are now stated explicitly to claim six possibilities in the proper form of a Markush group. Applicants have also amended claim 49 to clarify that a portion of the second insulating material is bonded by heating to another portion of the same material, rather than to another second insulating material. Amended claim 49 now distinctly claims the subject matter which applicants regard as the invention. For this reason, it is respectfully submitted that claim 49, as amended, is in full compliance with 35 U.S.C. § 112, second paragraph. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Claim Rejection – 35 U.S.C. § 103(a)

The Examiner has rejected claim 49 under 35 U.S.C. § 103(a) as being obvious over Japanese Patent Application No. 5-298930 (“Fujikura”) in view of U.S. Patent Number 3,662,461 (Lake et al.). The Examiner contends that Fujikura discloses an induction heating coil having a coil portion and comprising wires with conductors covered with a first insulating material or stranded wires obtained by bundling and twisting a multiplicity of wires. The Examiner further contends that the outer circumference of these wires is provided with a second insulating material and that the coil wire is wound a predetermined number of turns to have predetermined shape. Finally, the Examiner contends that Fujikura discloses that the second insulating material has an adhesion function generated by predetermined heating and is a bonding insulating material.

The Examiner admits that Fujikura does not disclose that the second insulating material may be a woven cloth or nonwoven cloth, either one being immersed in a non-cured rubber, half-cured rubber or thermoplastic resin. However, the Examiner contends that Lake et al. discloses an inductive heating coil with multiple layers of nonwoven cloth immersed in a curable resin, acting as an insulating material. The Examiner contends that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Fujikura in view of Lake et al. to use cloth immersed in a resin as an insulating material for an inductive coil for better electrical insulation to handle high voltage. Applicants respectfully traverse this rejection, as follows.

The presently claimed invention is directed to an inductive heating coil having a coil portion comprising wires whose conductors are covered with a first insulating material or stranded wires obtained by bundling and twisting a multiplicity of said wires. The second insulating material may be selected from a group consisting of woven cloth immersed in a non-cured rubber, woven cloth immersed in a half-cured rubber, woven cloth immersed in a thermoplastic resin, non-woven cloth immersed in a non-cured rubber, nonwoven cloth immersed in a half-cured rubber, and nonwoven cloth immersed in a thermoplastic resin. This second insulating material is wound around part or the whole of the outer circumference of the stranded wires, thereby providing a stable insulation layer. The second insulating material also has an adhesion function and is a bonding insulating material so that after heating is performed,

the coil portion may maintain a stable shape and a portion of the second insulating material is bonded to another portion of the material.

Fujikura discloses a collective insulating electric wire, comprising wires insulated with a thermosetting resin or an alcohol-insoluble resin. The circumference of a bundling of these wires is surrounded by an insulation layer comprising a thermally plastic resin or an alcohol-soluble resin. The melting point of the thermally plastic or alcohol-soluble resin must be lower than the melting point of the thermosetting or alcohol-soluble resin, so that when the wire is heated to a temperature higher than the melting point of the thermally plastic or alcohol-soluble resin, this resin is melted and the coiled wire is fixed by such resin to maintain a fixed shape, so that no deformation may occur. The invention of Fujikura is disclosed to be intended to eliminate the need for impregnation of a resin and hardening of the resin after coiling by instead forming "a melting layer" on the circumference of the wires to fix the shape of the coil.

Lake et al. discloses a dry insulated inductive coil formed by winding insulation around the turns of the coil during the winding of the coil. The insulation, as specified, is a nonwoven cloth impregnated with an electrically insulating resin, preferably a semi-cured epoxy resin or the like. The insulating cloth is warmed slightly during winding of the coil to cause the resin to readily flow into voids formed between the coil windings. After formation of the coil with the insulation layer, it is subjected to curing and processing by heating under pressure and vacuum to cure the resin and remove all air. The layers of insulation are fused to form a solid mass completely encapsulating the windings.

Fujikura and Lake et al. are not properly combinable under 35 U.S.C. § 103(a) to render claim 49 obvious. It is well settled that when making a rejection under 35 U.S.C. § 103(a), the Examiner has the burden of establishing a *prima facie* case of obviousness. The Examiner can satisfy this burden only by showing an objective teaching in the prior art, or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the teachings of the references in the manner suggested by the Examiner. In re Fine, U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion or incentive supporting the combination. In re Geiger, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987). Prior art references taken in combination do not make an invention obvious unless something in the particular prior art references would suggest the advantages to be derived from combining the

teachings of the references. In re Sernaker, 217 U.S.P.Q. 1, 6 (Fed. Cir. 1983). The mere fact that the prior art could be modified in the manner proposed by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification. Ex parte Dussaud, 7 U.S.P.Q.2d 1818, 1820 (PTO Bd.P.App.&Int. 1988). As the Court of Appeals for the Federal Circuit points out, it is impermissible to use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. Fine, 5 U.S.P.Q.2d at 1600. "Something in the prior art as a whole must suggest the desirability, and thus the obviousness of [the invention]." Uniroyal Inc. v. Rudkin-Wiley Corp., 5 U.S.P.Q.2d 1434, 1438 (Fed. Cir. 1988) (emphasis added). See M.P.E.P. § 2143.

Applicants respectfully submit that the proposed combination is improper, as there is no teaching, suggestion or motivation for the proposed combination in either the references themselves or in the knowledge generally available to the artisan. There is no specific objective teaching identified by the Examiner in Fujikura or Lake et al. that would lead the artisan to combine the two methods of insulating a coil. The Applicants have reviewed Fujikura and Lake et al. and can find no such objective teaching or motivation.

Applicants respectfully submit that the artisan would clearly have no motivation modify Fujikura because the method of Fujikura teaches away from the need for the method of Lake et al. That is, the artisan would not recognize any motivation to incorporate the method of insulation of nonwoven cloth immersed in resin of Lake et al. for use in the method of formation of an electric wire by melting layers of solid resin of Fujikura, which is intended for avoiding the need for impregnation of resin and then hardening of the resin after coiling. Essentially, Lake et al. discloses a coil formation method that is identical to that which Fujikura was trying to avoid. Thus, a person of ordinary skill in the art would not have been motivated to make the proposed combination because an objective of Fujikura was to provide a method of insulating an electric coil in order to avoid the method of impregnation of resin as disclosed by Lake et al.

In view of the foregoing remarks, Applicants respectfully submit that the proposed combination of prior art references with respect to claim 49 is not proper. Applicants submit that a prima facie case for obviousness has not been met, and Applicants accordingly request that the rejection of claim 49 under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

In view of the foregoing Amendment and Remarks, Applicant respectfully submits that the present Application, including claim 49, as amended, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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